

# **DISPLAY DEVICE FOR ARTICLE FOR SALE**

## **BACKGROUND OF THE INVENTION**

### 1. Field of the Invention

The present invention relates to a display device, and more particularly to a display device having a lockable and reusable configuration.

### 2. Description of the Prior Art

Various kinds of typical display devices have been developed for attaching to articles for sales, and for displaying the articles. Some of the typical display devices may comprise a lock device to lock the articles to the typical display devices, and to prevent the articles from being disengaged from the typical display devices or from being stolen by unauthorized persons.

For example, U.S. Patent No. 6,581,894 to Tong discloses one of typical display devices and comprises a lock device to lock the articles to the typical display devices, and to prevent the articles from being disengaged from the typical display devices. In addition, the lock device is arranged to allow the typical display devices to be detachably secured to the articles for sales, and to allow the articles to be reused again and again.

However, in Tong, the typical display device includes a complicated configuration, such as include a complicated plug device that has a Z-shaped slot or groove and one or more slits required to be formed therein, such that the typical display device may not be easily manufactured, and such that the typical display device include a greatly increased manufacturing cost.

The present invention has arisen to mitigate and/or obviate the

afore-described disadvantages of the conventional display devices.

### **SUMMARY OF THE INVENTION**

The primary objective of the present invention is to provide a display device including a lockable and reusable configuration and including a simplified configuration that may be easily and quickly  
5 manufactured with decreased manufacturing costs.

In accordance with one aspect of the invention, there is provided a display device for an article having a hole and a depression formed therein, the display device comprising a plug  
10 device including a housing engageable into the hole of the article, and the housing including a chamber formed therein, and including a spring blade provided therein, and including a projection extended therefrom and facing out of the housing, for engaging into the depression of the article, and for detachably attaching the housing to  
15 the article, a hanger device including an actuator extended therefrom, and engageable into the chamber of the housing, to selectively engage with the spring blade of the housing, and to selectively force the projection of the spring blade within the depression of the article, and to detachably lock the housing to the  
20 article with the actuator of the hanger device, and a locking device for locking the actuator of the hanger device to the housing of the plug device.

The housing includes a peripheral gap formed therein to form and to define the spring blade. The housing of the plug device  
25 includes a slot formed therein, the actuator of the hanger device includes a protuberance extended therefrom, and slidably engaged into the slot of the housing, to guide the actuator of the hanger

device to slide relative to the housing of the plug device.

The plug device includes a peg extended into the slot of the housing, and engageable with the protuberance of the actuator, to limit a sliding movement of the actuator of the hanger device  
5 relative to the housing of the plug device, and to prevent the actuator of the hanger device from being disengaged from the housing of the plug device.

The locking device includes a latch extended from the plug device, to engage with the hanger device, and to lock the hanger  
10 device to the plug device. The hanger device includes a flap extended therefrom, and engageable with the latch of the plug device, to lock the actuator in the chamber of the plug device, and to prevent the actuator from sliding relative to the housing of the plug device.

15 The plug device includes a peripheral recess formed therein, and formed around the latch, to increase a resilience of the latch. The plug device includes a plate secured on the housing, and engageable with the article, to allow the projection of the spring blade to be easily engaged into the depression of the article.

20 Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

25 FIG. 1 is a perspective view of a display device in accordance with the present invention, having an article attached thereto;

FIG. 2 is a front perspective view of the display device, having

the article removed therefrom;

FIG. 3 is a rear perspective view of the display device;

FIG. 4 is an exploded view of the display device;

FIG. 5 is a partial rear perspective view showing a hanger  
5 device of the display device;

FIG. 6 is a bottom perspective view showing a plug device of  
the display device;

FIG. 7 is a cross sectional view of the display device, taken  
along lines 7-7 of FIG. 2;

10 FIG. 8 is a cross sectional view similar to FIG. 7, illustrating  
the operation of the display device;

FIG. 9 is a partial cross sectional view taken along lines 9-9 of  
FIG. 7;

FIG. 10 is a partial cross sectional view taken along lines 10-10  
15 of FIG. 1;

FIGS. 11, 12 are partial cross sectional views similar to FIG.  
10, illustrating the operation of the display device;

FIG. 13 is a partial cross sectional view taken along lines 13-13  
of FIG. 11; and

20 FIG. 14 is a partial cross sectional views similar to FIG. 13,  
illustrating the operation of the display device.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to the drawings, and initially to FIGS. 1-7, a display  
device in accordance with the present invention comprises a plug  
25 device 1 for engaging into a hole 31 of an article 30 for sales, and a  
hanger device 2 for engaging with the plug device 1, and for locking  
or anchoring the plug device 1 to the article 30 for sales, and for

displaying the article 30 for sales, and for preventing the article 30 from being disengaged from the plug device 1 by unauthorized persons.

The plug device 1 includes a housing 10 and a plate 11 secured together, and a chamber 15 formed through the housing 10 and the plate 11. The housing 10 includes a slot 12 formed therein to increase a resilience or flexibility of the housing 10, and includes a spring blade 13 formed or provided therein, and defined by a peripheral gap 19, and located opposite to the slot 12 of the housing 10, and having a projection 14 extended therefrom and facing out of the housing 10.

It is preferable that the housing 10 includes a shape or an outer peripheral contour or a cross section similar to or equals to that of the hole 31 of the article 30, for allowing the housing 10 to be snugly fitted or engaged within the hole 31 of the article 30 (FIGS. 1 and 10-12) with such as a force-fitted engagement, and to prevent the housing 10 from being rotated relative to the article 30.

The resilience or flexibility of the spring blade 13 allows the projection 14 of the spring blade 13 to engage into the hole 31 of the article 30 (FIG. 11), and then to be biased to engage into a depression 32 of the article 30 (FIGS. 10, 12), so as to detachably latch or anchor or couple the housing 10 to the article 30. The plate 11 of the plug device 1 may be engaged with the article 30 (FIGS. 1, 10, 12), to allow the projection 14 of the spring blade 13 to be easily and precisely engaged into the depression 32 of the article 30.

As best shown in FIG. 4, the slot 12 of the housing 10 is also formed through plate 11, and the plate 11 includes a peg 16

extended into the slot 12 of the housing 10 (FIGS. 4, 6, and 9-12), for latching or anchoring hanger device 2 to the plug device 1, and for preventing the hanger device 2 from being disengaged from the plug device 1, which will be discussed in further details hereinafter.

5       The plug device 1 further includes a hook or a latch 17 extended from the housing 10 or from the plate 11, and slightly extended upwardly or outwardly beyond the plate 11, and partially extended into the chamber 15 of the plug device 1, and includes a peripheral recess 18 formed around the latch 17, for increasing the  
10       resilience or flexibility of the latch 17.

      The hanger device 2 includes a board 20 for applying words or letters, or patterns, or marks, or advertisements thereon, and an opening 21 formed in the board 20 for such as hanging purposes, and includes an actuator 22 extended from or provided in the lower  
15       portion thereof, and engageable into the chamber 15 of the plug device 1, to engage with the spring blade 13 of the housing 10, and to force and retain the projection 14 of the spring blade 13 within the depression 32 of the article 30 (FIGS. 10, 12), and thus to lock or latch or anchor the housing 10 to the article 30.

20       The actuator 22 of the hanger device 2 includes one or more notches or cavities 27 formed therein, or relatively, includes one or more fins 23 extended therefrom, to form the notches or cavities 27 thereof, and to engage with the housing 10, and thus to stably attach or couple or secure the actuator 22 to the housing 10 with such as  
25       force-fitted engagements, or the like.

      The actuator 22 of the hanger device 2 further includes a protuberance 24 extended therefrom, and slidably engaged into the

slot 12 of the housing 10 (FIGS. 9-12), and engageable with the peg 16 of the plate 11 or of the housing 10 of the plug device 1 (FIG. 11), to limit the sliding movement of the actuator 22 of the hanger device 2 relative to the housing 10 of the plug device 1, and thus to prevent the actuator 22 of the hanger device 2 from being disengaged from the housing 10 of the plug device 1.

In operation, as shown in FIGS. 10, 12 and 14, when the actuator 22 of the hanger device 2 is deeply engaged into the chamber 15 of the plug device 1, and is engaged with the spring blade 13 of the housing 10, the actuator 22 of the hanger device 2 may force and retain the projection 14 of the spring blade 13 within the depression 32 of the article 30, in order to solidly lock the housing 10 to the article 30, and to prevent the actuator 22 of the hanger device 2 from being disengaged from the housing 10 of the plug device 1 and the article 30.

As shown in FIGS. 11 and 13, when the actuator 22 of the hanger device 2 is moved upwardly relative to the housing 10, and moved away from or disengaged from the spring blade 13 of the housing 10, or offset from the projection 14 of the spring blade 13, the spring blade 13 may be moved or bent or curved into the chamber 15 of the plug device 1, to allow the projection 14 of the spring blade 13 to be disengaged from the depression 32 of the article 30, and thus to allow the housing 10 to be disengaged or separated from the article 30.

As shown in FIGS. 3, 5, 7, the hanger device 2 includes a flap 25 extended from either the board 20 or the actuator 22, and engageable into the chamber 15 of the plug device 1, or engageable

with the latch 17 of the plug device 1 (FIG. 7), to stably lock or anchor the actuator 22 in the chamber 15 of the plug device 1, and to prevent the actuator 22 from sliding relative to the housing 10 of the plug device 1, and thus to stably retain the actuator 22 of the hanger device 2 to the housing 10 of the plug device 1 and the article 30.

As shown in FIG. 8, it is preferable that the flap 25 of the hanger device 2 includes an inclined or tapered surface formed in the lower portion thereof, to engage with the latch 17 of the plug device 1, and to allow the flap 25 of the hanger device 2 to move beyond and to be engaged with or hooked by the latch 17 of the plug device 1. The engagement of the latch 17 of the plug device 1 with the flap 25 of the hanger device 2 may prevent the actuator 22 of the hanger device 2 from being disengaged or separated from the housing 10 of the plug device 1 and the article 30 by unauthorized persons.

As shown in FIGS. 11-14, when the latch 17 is cut or removed from the plate 11 or the housing 10 of the plug device 1 by users, the flap 25 and thus the actuator 22 of the hanger device 2 may slide relative to the housing 10, to allow the projection 14 of the spring blade 13 to be selectively disengaged from the depression 32 of the article 30 (FIG. 11) when the actuator 22 of the hanger device 2 is offset from the projection 14 of the spring blade 13, and thus to allow the housing 10 to be detachably or reusablely locked to the article 30.

The flap 25 and the actuator 22 of the hanger device 2 may be snugly fitted or engaged in the chamber 15 of the housing 10 with



such as force-fitted engagements, to retain the projection 14 of the spring blade 13 to be engaged within the depression 32 of the article 30, and to detachably lock the actuator 22 of the hanger device 2 to the housing 10 of the plug device 1, and thus to allow the display  
5 device to be used again to detachably lock the article 30 to the plug device 1 with the hanger device 2.

It is to be noted that the actuator 22 of the hanger device 2 is required to simply engage into the chamber 15 of the housing 10 without rotational movement, and the actuator 22 of the hanger  
10 device 2 includes a greatly simplified configuration that may be easily and quickly manufactured with decreased manufacturing costs.

Accordingly, the display device in accordance with the present invention includes a lockable and reusable configuration and  
15 including a simplified configuration that may be easily and quickly manufactured with decreased manufacturing costs.

Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that  
20 numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.